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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,036	07/23/2001	Joseph B. Kejha	JBK -10	3738

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EXAMINER	
WALKER, KEITH D	
ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/911,036	KEJHA ET AL.	
	Examiner	Art Unit	
	Keith Walker	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-23 and 28-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *5-23 and 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Corrections to the claims have been noted and the objections to the claims are withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kejha (US Patent 5,443,602).

Regarding claims 15-18, the claims fall under the Jepson type claim and are being interpreted as such (MPEP 2129). For claims 15-19, the limitations "by a dip-coating process" and "is treated by a solvent resistant primer before coating" is seen as product-by process and as such even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. "The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." (MPEP 2113). Kejha teaches a grid with a coating of electrode material so that the grid is embedded in the middle of the coating (Fig. 4; Col. 4, ll. 31-60).

2. Claims 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art.

The interpretation of claims 15-18 as discussed above is incorporated herein. Applicant states in the prior art description that US Patent 5,587,253 teaches an electrode with an embedded grid in the middle of the electrode material. Since the claim is to a product and not a process, the final product of the prior art is seen as equivalent to the applicant's claimed structure and so the claims are anticipated. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is not given patentable weight.

3. Claims 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 3,607,411 (Brownrigg).

The interpretation of claims 15-18 as discussed above is incorporated herein.

Brownrigg teaches an expanded metal grid used to make an electrode. The grid is pulled through a slurry of active material (dip-coated), therefore placing the grid in the middle of the electrode coating (Abstract; Col. 5, ll. 1-12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kejha in view of Brownrigg.

The teachings of Kejha and Brownrigg as discussed above are incorporated herein. Kejha discloses a method for coating a current collector with cathode material. (Col. 2, ll. 5-7). As shown in Fig. 4, a web (11), which may be a "desired current collector," travels into a dip tank (37) and vertically upward through a solidification chamber (43) using nip rollers. (Col. 3, ll. 50-55; Col. 4, ll. 46-56; Col. 6, ll. 4-5). The speed of all the components of the manufacturing process are synchronized and therefore controlled (Col. 7, ll. 59-61). Kejha teaches that the current collectors described in US Patent Application serial number 08/281,011 may be used in the Patent 5,443,602 invention. (See US Patent 5,750,289, child of application 08/281,011, Col. 3, ll. 48-56). The metal grids, expanded metal foils, perforated metal foils, and solid metal foils recited in instant claims 28-31 are encompassed by the current collectors disclosed in US Patent application serial number 08/281,011. As disclosed by applicants, these current collectors include two or three layers of different materials including a plastic film or net layer, and one or two metal layers on the surface of the plastic. Thus, the current collectors disclosed in US Patent Application serial number 08/281,011 include a metal layer, which would be in the form of metal grid, expanded metal foil, perforated metal foil, or solid metal foil.

Kejha teaches a motor driven spool (Col. 5, ll.14-20) but does not discuss the use of a slip clutch.

Brownrigg teaches a slip clutch to drive the nip rollers (Col. 3, ll.35-52). The motivation to use the slip clutch is to insure uniform pulling force on the web, preventing a lag or break in the material, which would create a non-uniform electrode coating.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the driving motor of Kejha with the slip clutch of Brownrigg to provide a uniform driving force on the metal grid to insure an even coating of electrode material.

5. Claims 5-8, 10, 11, 19, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Kejha (US Patent 5,443,602) in view of Andersen et al. (US Patent 6,280,879).

As discussed above, Kejha discloses the elements of claims 28-31 and 15-18, as discussed above and incorporated herein. Kejha also teaches attaching masking tape to the terminals of the current collector prior to further processing of the collector. (Col. 3, ll. 45 - Col. 4, ll. 30). However, Kejha does not disclose application of a primer material to a current collector prior to dip-coating the current collector.

With regard to claims 5, 6, 10, 11-13 19, 21, and 22, Andersen teaches that current collector foils can be protected from highly reactive and corrosive electrode and electrolyte materials by coating the current collectors with primer. The primer is composed of carbon black, a binder (PVDF or PVDF copolymers), and solvent (multiple solvents used in Examples II and III). It was shown that the primer resulted in good adhesion. (Col. 5, ll. 27 – Col. 6, ll. 23 ; Col. 14, ll. 14-16). One of ordinary skill in the art at the time the invention was made would have known Thus, it would have been obvious to one of ordinary skill in the art to use the primer disclosed by Andersen et al. in the process disclosed in by Kejha in order to protect current collectors from reactive and corrosive materials and promote good adhesion.

With regard to claims 7, 8, 21, and 22, Andersen teaches an electrode paste having solvent in the range of 20-88% by weight, binder in the range of 1-10% by weight, active material in the range of 25-50% by weight, and carbon black as a conductive additive in the range of 2-10% by weight. PVDF is a preferred binder, and ketones, which include acetone, and N-methyl-pyrrolidone are preferred solvents. (Col. 7, ll. 17-65). Adjustment of the boiling point/evaporation rate of the solvent and the viscosity of the solvent are taught as critical, and thus it would have been obvious to one of ordinary skill in the art to use a combination of solvents to adjust vapor pressure, etc.

Regarding the order of the steps involved, Kejha teaches masking off an area of the collector to protect the surface from any subsequent coatings so a clean surface is provided for further attachment means. Anderson teaches providing a primer coating on the collector to promote good adhesion. It would have been obvious to one skilled in the art at the time of the invention to mask off the areas of the collectors needing a clean coating free surface, as taught by Kejha, before coating the collector with the primer coating as taught by Anderson.

6. Claims 9, 14, 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Kejha (US Patent 5,443,602) in view of Andersen et al. (US Patent 6,280,879), and further in view of Werner (U.S. Patent No. 3,694,392).

Kejha and Anderson teach the elements of claims 5 and 6 as discussed above and incorporated herein. Kejha teaches pulling the grid over a horizontal roller after a dip coating process (Figs. 1 & 8). However, neither reference discloses a primer

containing lithium polysilicate. Werner teaches a primer for increasing adhesion of a fluorocarbon polymer coating to a substrate. This primer contains lithium polysilicate, carbon black and water. (Col. 1, ll. 42-48, Example 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a primer containing lithium polysilicate, carbon black, and water as disclosed by Werner in the process disclosed by Kejha and Andersen et al. in order to increase adhesion of the dip-coated slurry to the current collector.

7. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Kejha (US Patent 5,443,602) in view of Andersen et al. (US Patent 6,280,879), and further in view of Iwanaga et al. (U.S. Patent No. 5,385,761). Kejha and Andersen teach the elements of claims 28-31; however, neither reference teaches an electrode-cleaning step. Iwanaga teaches sandblasting to remove the mask after the electrode has been coated. (Col. 8, ll. 42-44). One of ordinary skill in the art would recognize that any abrading or polishing would remove the mask and any oxides that may have formed on the masked portion of the collector and would leave behind detritus. This detritus would adversely affect the joining of the current collector and terminal tab, thus requiring removal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an electrode cleaning step to remove the mask as taught by Iwanaga in the process as disclosed by Kejha and Andersen et al. in order to remove the mask and any oxides that may have formed so that good physical and electrical connections may be made.

Response to Arguments

8. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection as discussed above.

Concerning the solvent resistant primer taught by Anderson, since the primer and the solvents used are the same, the properties and interactive characteristics of each would be the same as those claimed in the instant application. Therefore the primer would have solvent resistant characteristics.

Concerning the masking of the current collector, Kejha teaches masking the terminals when they are placed on and become part of the collector and before the grid is sent to another process such as a coating step.

With respect to the removal of the coating step, Iwanaga teaches cleaning an electrode area of an unwanted coating to produce a clean area for contact. In the case of Iwanaga the coating is an epoxy mask used to protect the area while the electrode is subjected to other processes. The process of removing the mask as taught by Iwanaga and the "removing said coating" of the instant claims is seen as equivalent in nature and thus the instant claim is obvious over the prior art.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Walker whose telephone number is 571-272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KW

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER